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DATE: March 6, 2003 OUR REF: SIP-106-A YOUR REF: USSN 09/619,547

TO (COMPANY): US Patent & Trademark Office, Group Art Unit 2834

FAX RECEIVED

ATTN: Examiner David W. Scheuermann

MAR 6 2003

FROM: Joseph P. Carrier

TECHNOLOGY CENTER 2800

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MESSAGE: Please Promptly Deliver The Enclosed AMENDMENT- B and Petition For One-Month Extension To The Examiner.

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SIP-106-A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ozawa et al.
Serial No.: 09/619,547
Filed: 19 July 2000
Group Art Unit: 2834
Examiner: Scheuermann, David W.
Title: STATOR WINDING AND MANUFACTURING
METHOD THEREFOR

AMENDMENT-B

FAX RECEIVED

MAR 6 2003

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Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated 21 November 2002, please amend the above-identified application as follows.

IN THE DRAWINGS:

Please amend Figs. 13-16 by adding the label "PRIOR ART" thereto as shown on the attached sheets.

IN THE SPECIFICATION:

Please amend the paragraph at page 11, lines 18-23 and the paragraph at page 6, lines 1-5 as shown on the attached sheets (including a clean version of the amended paragraphs and a copy of the amended paragraphs showing the changes with distinguishing markings).

IN THE CLAIMS:

Please add new claims 21-24 as shown on the attached sheets.

REMARKS

Upon entry of the present paper, the claims in the application remain claims 1-24, of which claims 1, 11 and 18 are independent. The Commissioner is hereby authorized to charge the fee of

\$72.00 to Deposit Account No. 50-0744 in the name of Carrier, Blackman & Associates, P. C., in payment of the fee for presentation of 21st-24th total claims. A duplicate copy of this sheet is enclosed. Also enclosed herewith is a Petition for One Month Extension.

Again, Figs. 13-16 are amended by adding the label "PRIOR ART", the specification is amended to properly implement two of the changes improperly identified in Preliminary Amendment-A (as referred to by the Examiner at the middle of page 2 of the Office Action), while new claims are added to further define features of the invention relating to the multi-layered nature of the hollow cylindrical body.

Applicant respectfully submits that the amendments are fully supported throughout the original application. Further, applicant respectfully submits that the Examiner's objection to the drawings presented at the top of page 2 of the Office Action, is overcome by the amendments thereto, and it is respectfully requested that such objection be reconsidered and withdrawn.

Art-Based Rejections

1. On pages 2-3 of the Office Action, the Examiner has rejected claims 1, 2, 4-6, 8-10, and 17-19 under 35 USC §103(a), as being unpatentable over the conventional winding of Figs. 15-16 in view of Marchegiani (WO 90/10336), presented at the paragraph bridging pages 2-3 of the Office Action. It is the Examiner's position (as briefly set forth in the Office Action) that the conventional winding of Figs. 15-16 includes all of the features of the rejected claims, except for the features involving use of a sheaf of fine wires bundled together, and other features of the sheaf; but that it would have been obvious to a person skilled in the art at the time of the present invention to have modified the conventional winding of Figs. 15-16 by forming it from a sheaf of fine wires having the claimed characteristics based on the teachings of Marchegiani relating to his stranded conductor.

Applicant's Response

Upon careful consideration applicant respectfully traverses such rejection, and submits that each of claims 1, 2, 4-6, 8-10, and 17-19 is clearly patentably distinct over the conventional stator winding of Figs 15-16 and Marchegiani, because the conventional winding of Figs. 15-16 does not



include most of the features of the claimed stator winding relating to its multi-layered construction, whereas Marchegiani merely discloses a stranded conductor and hence also fails to disclose or suggest numerous features of the claimed invention.

For example, independent claims 1 and 18 define that the winding is a hollow cylindrical body formed by multiple steps/actions of: forming rhombic shaped turns of the wire sheaf, forming *approximately rhombic shaped coil segments* of a continuous length of the wire sheaf by arranging a plurality of the turns so as to be sequentially shifted in the direction of one diagonal of the rhombic shape, forming a band shaped body with a plurality of the coil segments sequentially shifted in the direction of the one diagonal and rolling the band into a hollow shaped body. As discussed throughout the present application, use of the claimed steps/features of forming the coil segments from a plurality of continuous turns, and then forming the band shaped body from a plurality of the coil segments sequentially shifted in the direction of the one diagonal desirably results in a *multi-layered construction* capable of high/higher output and miniaturization of the stator (two very significant advantages). Moreover, construction of the winding remains simple, and has good formability.

Conversely, in the conventional winding of Figs. 15-16, a band shaped coil body is constructed by forming a band shaped coil 111 of sequentially aligning rhombic shaped turns, each turn being formed from single wires, and then *directly* rolling the coil 111 into a hollow cylindrical body 113, such that the hollow cylindrical body does not have a *multi-layered* construction. See page 3, lines 1-10 of the present specification. Correspondingly, applicant respectfully submits that even if the single wire used in forming the individual turns of the conventional winding is replaced with a stranded conductor sheaf such as disclosed by Marchegiani, which is what the Examiner proposes, any resulting band shaped coil body would still be formed from a number of rhombic shaped turns of the wire which are then *directly* rolled into a hollow cylindrical body according to the conventional disclosure of Figs. 15-16, and correspondingly any resulting winding would still not have a multi-layered construction and would not achieve or suggest the invention of claims 1 and

18.

Further, applicant respectfully submits that the additional, related features of dependent claims 2, 4-6, 17 and 19 defining additional aspects of the multi-layer structure of the claimed winding, and are also not achieved or suggested by Figs. 15-16 or Marchegiani.

For example, claims 2 and 19 define that, with the wire sheaf, one end portion of opposite end portions of the respective turns which are located in a direction of another diagonal of the rhombic shape orthogonal to the direction of the one diagonal is wound from an inner peripheral side of the hollow cylindrical body to an outer peripheral side thereof, and another end portion of the opposite end portions of the respective turns is wound from the outer peripheral side of the hollow cylindrical body to the inner peripheral side thereof. Again, the defined features directly pertain to the multilayered construction of the hollow cylindrical body. Conversely, the respective turns of the conventional band-shaped coil of Fig. 15 are each simply wound in one continuous loop as shown.

Similarly, claims 5-6 and 17 define the location of sides of the coil segments on the inner and outer peripheral sides of the hollow cylindrical body, again, directly pertaining to the multi-layered structure of the hollow cylindrical body, whereas the conventional winding of Figs. 15-16 has neither the coil segments or the multilayered structure of the invention.

Also in regard to claim 17, such claim depends from claim 3 (which is not rejected over the combination of Figs. 15-16 in view of Marchegiani), and therefore incorporates the limitations of claim 3, including the approximately U-shaped bent back portions of the turns. Such feature is not disclosed or in any way suggested by Figs. 15-16 or Marchegiani.

Still further, applicant respectfully submits that although Marchegiani teaches a stranded conductor (sheaf) of approximately rectangular cross section and wherein individual wires are helically wound, and also teaches that the stranded conductor may be useful in forming windings for electrical machines, Marchegiani does not disclose or suggest the specific feature of claim 8 requiring the wire sheaf to be twisted *at least one turn within a range of one side of the approximately rhombic shaped winding turns*. As disclosed in the present application, e.g., the



paragraph bridging pages 6-7 the claimed feature is particularly advantageous for suppressing unnecessary losses of circulating currents.

Based on the foregoing, applicant respectfully submits that the Examiner has not established prima facie obviousness of the subject matter of any of claims 1, 2, 4-6, 8-10, and 17-19 under 35 U.S.C. § 103(a), and it is respectfully requested that the rejection based on Figs. 15-16 and the Marchegiani reference be reconsidered and withdrawn.

2. On page 3 of the Office Action the Examiner has reject claims 3, 7, 16 and 20 under 35 USC § 103(a), as being unpatentable over the conventional winding of Figs. 15-16 in view of Marchegiani as applied to claim 1, and further in view of Umeda et al. (US Patent 5,955,810). It is the Examiner's position, as briefly set forth, that it would have been obvious to use U-shaped turn portions on the end of the stator winding of Figs. 15-16, as already modified in light of Marchegiani, to improve cooling based on the teachings of Umeda.

Applicant's Response

Upon careful consideration applicant respectfully traverses such rejection, and submits that each of claims 3, 7, 16 and 20 is clearly patentably distinct over the conventional stator winding of Figs 15-16, Marchegiani and Umeda, because Umeda fails to overcome the deficiencies of Figs. 15-16 and Marchegiani discussed above, because the proposed modification to the winding of Figs. 15-16 based on select teaching of Umeda is improperly based on a suggestion coming entirely from the Examiner (guided by impermissible hindsight of applicant's disclosure), rather than from any teaching or suggestion which may be fairly gleaned from the references themselves, and because Umeda also fails to disclose the specific bent back portion as claimed.

Regarding the proposed modification, applicant respectfully submits that Umeda's automotive alternator, including its stationary blade shaped windings, is plainly very distinct from a slotless stator such as shown in Figs. 15-16, and such that persons of ordinary skill in the art would never consider the proposed modification to be obvious. In Umeda's alternator, the stationary blade shaped portions of the windings do not contact adjacent stationary blade shaped portions, whereas

the particular function of the stationary blade shaped portions as disclosed by Umeda is to form passages for cooling winds. Completely differently, in the slotless stator winding of Figs. 15-16, adjacent turns of the winding are in contact with each other, while cooling wind passages are not formed in portions of the turns. As such, applicant respectfully submits that there is no motivation or reason for the proposed modification which may be fairly gleaned from the references. Instead, the only motivation for the proposed modification appears to be impermissible hindsight of applicant's disclosure.

In this regard, the Courts and the Board of Patent Appeals and Interferences (BPAI) have consistently held that, for purposes of establishing obviousness under 35 USC §103, a rejection advanced by an Examiner must rest on a factual basis, with the facts being interpreted without hindsight reconstruction of the invention from the prior art, and that the Examiner may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. Ex Parte Hamond, 41 USPQ2d 1217, 1220, citing In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968).

Moreover, applicant respectfully submits that even if Umeda's teachings were somehow combined with the winding of Figs. 15-16, the specific location and orientation of the claimed bent back portions is in no way suggested by either reference, and such feature is correspondingly not made obvious by any hypothetical combination of the applied references/teachings. For example, Umeda's stationary coil groups do not include rhombic shaped turns, do not extend from an inner peripheral side of a hollow cylindrical body to an inner peripheral side of the hollow cylindrical body, etc.

Based on the foregoing, applicant respectfully submits that the Examiner has not established prima facie obviousness of the subject matter defined in any of claims 3, 7, 16 and 20 under 35 USC §103(a), and accordingly, it is respectfully requested that the rejection based on Figs 15-16, Marchegiani and Umeda be reconsidered and withdrawn.

Other Matters

The additional references cited by the Examiner (Mackawa and Kawano et al.) have been considered by applicant, but it is respectfully submitted that these additional references fail to overcome the deficiencies of Figs 15-16 and the Marchegiani and Umeda references relative to the claimed invention, as discussed above.

New claims 21-24 are believed to be allowable based on the foregoing arguments concerning the merits of claims 1 and 18, as well as on the merits of the limitations presented in the new claims.

Conclusion

In conclusion, applicant has overcome the Examiner's objection and rejections as presented in the Office Action; and moreover, applicant has considered all of the references of record, and it is respectfully submitted that the invention as defined by each of the present claims is clearly patentably distinct thereover.

The application is now believed to be in condition for allowance, and a notice to this effect is earnestly solicited.

Favorable reconsideration is respectfully requested.

If the Examiner is not fully convinced of all of the claims now in the application, applicant respectfully requests that she telephonically contact applicant's undersigned representative to expeditiously resolve prosecution of the application.

Favorable reconsideration is respectfully requested.

Respectfully submitted,

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March 6, 2003

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I hereby certify that this correspondence is being sent via facsimile transmission to the US Patent & Trademark Office, Art Unit 2834, at (703) 308-7724, on March 6, 2003.

JPC/ms